

Accordingly, this present response is a bona fide attempt to advance the application to allowance and issuance pursuant to 37 C.F.R. § 1.111.

35 U.S.C. § 112, Second Paragraph Concerns

The Examiner has alleged in paragraph 2 of the Office Action that claim 7 is indefinite in its recitation of a *predetermined* thickness, indicating that the recitation “specifies a limitation that is determined beforehand.” The examiner has suggested that the word “predetermined” be deleted from the claim to overcome the alleged indefiniteness.

The statute provides, as the Examiner is well aware, that the specification shall conclude with claims “particularly pointing out and distinctly claim claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112. The purpose of this requirement is twofold: 1) to ensure that the scope of the claims is clear such that the boundaries of infringement of an issuing patent are clear to the public; and 2) to provide a clear recitation of what the applicant regards as the invention so that the patentability of the invention may be determined. See MPEP § 2173.

Accordingly, claim 7, as dependent upon dependent claim 6, recites, in part, a plurality of cycles of repeating steps of illuminating and then etching, “for a number sufficient to reduce the hydrogenated amorphous silicon film to a predetermined thickness.” The Applicant has provided descriptive and definitive support for such claim recitation in the written description; for example, at page 6, lines 5 and 6. Generally, and as but one example, the production of film over a substrate to produce a desired or determined film thickness, for example in the production of solar cells, allows for the production of a film suitable for a particular device application. It would be preferable in the production of many thin film devices that a thickness for the provided film would be produced to a suitable and predetermined configuration for the device. It is urged that the fact that a thickness of a film is “predetermined” does not make such recitation indefinite due to a previous determination of thickness in implementing the present invention.

Acceptability of the claim language depends on that which one of ordinary skill in the art would understand what is claimed. See MPEP §§ 2173.02 and 2173.05(b). It is asserted that one of ordinary skill in the art of film production for related devices would understand the claim limitation of "a predetermined thickness" to recite a clear and defined thickness for the hydrogenated amorphous silicon film, given design and production procedures, implemented in the production of device having film components and features.

It is further asserted that the Examiner's rejection of allegedly improper claim limitations, due to the Applicant's use of claim language providing a predetermination limitation, is not based in the law or rules governing such claim language under 35 U.S.C. § 112, second paragraph (i.e., that a limitation is allegedly indefinite if it is determined "beforehand"). The Applicant respectfully requests that the Examiner more precisely indicate any applicable case law or MPEP support for such a determination of indefiniteness of the limitations of claim 7.

Accordingly, the Examiner is respectfully and earnestly urged to withdraw the rejection alleging the indefiniteness of claim 7 under 35 U.S.C. § 112, second paragraph. The Examiner is also requested to contact Applicant's representative, the undersigned counsel, should any issues remain outstanding regarding the definiteness of claim 7.

Novelty Concerns

The Examiner has alleged in paragraph 4 of the outstanding Office Action that claims 1, 2, and 8-17 are anticipated by the Hollingsworth reference.

As the Examiner is aware, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegall Bros. v. Union Oil Co. of California, 814 F.2dc 628, 631 (Fed. Cir. 1987). Furthermore, "the identical invention must be shown in as complete detail as is contained in the . . . claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236 (Fed. Cir. 1989). It is urged that the Hollingsworth reference does not expressly or inherently disclose the invention as

claimed in claims 1, 2 and 8-17 and Examiner has failed to identify the express or inherent disclosure in Hollingsworth.

Hollingsworth appears to be primarily directed to photolithography applications. Hollingsworth provides exposing an a-Si:H layer to ultraviolet light. Hollingsworth, Column 5, lines 61-64. However, Hollingsworth provides for the etching of areas of the a-Si:H layer unexposed to the ultraviolet light. See Hollingsworth, Abstract and Column 7, lines 18-37. Hollingsworth may provide for incident UV light to the a-Si:H layer and potentially forming dangling bonds at or near the surface of the a-Si:H layer. However, the Hollingsworth method provides for the removal of unexposed areas of the a-Si:H layer; i.e., those portions of the a-Si:H layer not having the dangling-bond defect with regard to the illumination of the UV light. It also appears that entire areas of the unexposed a-Si:H layer are removed.

In contrast, and as provided in claim 1, embodiments of the present invention provide, parenthetically and for example, the etching of the surface of the a-Si:H layer to remove high densities of light induced defect near the surface of the a-Si:H layer. Independent claim 1 provides, for example, in part the steps of "illuminating the surface with an essentially blue or ultraviolet light to form high densities of a light induced defect near the surface" and "etching the surface to remove the defect." Such claimed subject matter is neither taught or suggested by the Hollingsworth reference. The present invention is directed to improving a-Si:H layer stability by increasing the density of metastable two-hydrogen complexes. An excess metastable region ($M(Si-H)_2$), as depicted in Figure 1 of the present application, is created by the illumination of blue or ultraviolet light. Damaged area 2a, having an increase in dangling-bond density, is subsequently removed, leaving the bulk region 2c of the hydrogen-rich a-Si:H layer.

It appears that the Hollingsworth reference is concerned and directed to providing a resist layer of Si-O₂ that may be resistant to further processing steps such as further etching and dopant implantation. See Hollingsworth, Column 7, lines 25-37 and lines 55-60. The present invention, however, is directed to the removal of high dangling bond density, damaged regions of the

surface of the a-Si:H layer and retention of a hydrogen-rich a-Si:H regions below the illuminated surface.

Therefore, it is urged that the Hollingsworth reference does not explicitly or inherently disclose the claimed invention as recited in independent claim 1. The Examiner is therefore requested to withdraw the rejections based upon the Hollingsworth reference and allow independent claim 1. Furthermore, claims 2-17 are dependent from claim 1 and should accordingly be allowed and passed to issue with the requested allowance of the independent claim, whereby dependent claims 3-17 retain all of the limitations of claim 1 and the novel and non-obvious features thereof.

Obviousness Concerns

The Examiner has alleged in paragraph 6 of the outstanding Office Action that claims 3-7 are obvious in light of the Hollingsworth reference, in further view of the Shimbo reference. However, the features of the present invention presented and claimed in independent claim 1, some of which are highlighted in the discussion above, are not identified in the Shimbo reference.

As the Examiner is well aware, the burden of the Examiner in establishing a prima facie case of obviousness includes establishing that all claim limitations are taught or suggested by the prior art. In re Royka, 490 F.2d 981 (C.C.P.A. 1974). It is urged that the cited references do not teach or suggest the invention as claimed. Claim 1 recites, for example, the steps of "illuminating the surface with an essentially blue or ultraviolet light to form high densities of a light induced defect near the surface" and "etching the surface to remove the defect." Such disclosure is neither taught or suggested in the Hollingsworth and Shimbo references. As previously described, the Hollingsworth reference is directed to the removal of unexposed areas of the a-Si:H layer. The Shimbo reference does not appear to address, for example, the claimed limitation of independent claim 1 previously identified. Hollingsworth, accordingly, does not teach or suggest the feature of illuminating with blue or UV light to form high densities of light

induced defect and the etching of the surface to remove the defect, as recited in the present claims. Shimbo appears to be directed to the more general production of particular thin-film transistor devices. Therefore, the cited references do not teach or suggest the claimed invention as recited in claims 3-7. The Examiner is therefore requested to allow claims 3-7. Furthermore, claims 3-7 should accordingly be allowed with the requested allowance of independent claim 1.

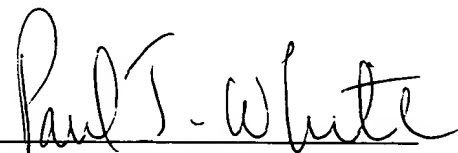
Statement Regarding Amendments and Embodiments of the Present Invention

The present response has been made with the understanding that the present and originally presented claims, including any embodiments disclosed in the present invention, may be later presented in continuing applications, without prejudice or disclaimer. The remarks have been particularly presented to avoid, where applicable, prosecution history estoppel, or the like.

Conclusion

Claims 1-17 remain in the application. The Applicant respectfully and earnestly requests reconsideration of the application and allowance of the present claims.

Respectfully submitted,

A handwritten signature in cursive script that reads "Paul J. White". The signature is written in dark ink and is positioned above the printed name and contact information.

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